Homework 1 Arrays, tuples and records

1. Trace through the following pseudocode and complete the trace table below.

```
maxAge = 0
array ageList[4]
for index = 0 to 3
   ageList[index] = input ()
   if ageList[index] > maxAge then
      maxAge = ageList[index]
      position = index
   endif
next index
print (AgeList[position], position)
```

Test Data 12, 16, 17, 11

	ageList						
index	0	1	2	3	maxAge	position	Output
					0		

[4]

2. A teacher uses a program to store an array of 20 pupils pupil[0:19] she would like to sort them into two groups for a group activity. Write a pseudocode algorithm that will read the 20 names and then output lists consisting of every other pupil.

Example: GROUP 1
pupil1
pupil3
pupil5

GROUP 2
pupil2
pupil4
pupil6

[5]

3. (a) The results of an Athletics event involving several schools are recorded. An array **school[0:3]** holds the names of the 4 schools participating. A second array **medal[0:3]** holds the number of medals that each school has won. This array is updated each time a new result is announced.

For test purposes, the names of the schools are recorded as AAAA, BBBB, CCCC, DDDD. The medal array is pre-loaded with results [4,7,1,3], meaning that school AAAA has 4 medals, BBBB has 7 medals, etc.

Each time a new result comes in, the user enters the result. They are prompted to enter the school number (1 for AAAA, 2 for BBBB etc.) and the medal array is updated.

When the user enters -1 for the school number, the results are printed in the form

School number nn School name XXXX Number of medals nn

Complete the pseudocode for this program. Include validation to ensure that a valid school number is entered. [8]

```
school = ["AAAA", "BBBB","CCCC","DDDD"]
medal = [4,7,1,3]
```

(b) It is possible to have an n-dimensional array holding a set of elements of the same type. Give an example of a program where it might be useful to use a multi-dimensional array. How many dimensions would this array need? [2]

(c) Give **one** difference between the data structures **array** and **tuple**. [1]

[Total 20 Marks]